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ABSTRACT

The Self Description Questionnaire II (SDQ II) was administered to 901 students (11 to 18 years old) in grades 7 through 12 who attended one public coeducational high school. The 11 factors the SDQ II was designed to measure were clearly identified in a conventional/exploratory factor analysis and in a confirmatory factor analysis using LISREL. Each scale was reliable and correlations among the factors were small. All of the SDQ II scales were significantly correlated with sex and/or age, though the effect of sex and age were independent of each other and the relationships were small. At every grade level academic criterion measures were significantly correlated with every academic scale, but not with the nonacademic scales. These findings not only demonstrate the multidimensionality of self-concept, but also show that its relationship to other constructs cannot be adequately understood if this multidimensionality is ignored. The findings have important implications for the study of adolescent self-concept, and also support the construct validity of the SDQ II and the Shavelson model upon which it is based. (Author/PN)

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Multidimensional Adolescent Self-concepts: Their Relationship to Age, Sex and Academic Measures

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Multidimensional Adolescent Self-concepts:
Their Relationship to Age, Sex and Academic Measures

ABSTRACT

The Self Description Questionnaire II (SDQ II) was administered to 901 students (11 to 18 years old) in grades 7 through 12 who attended one public coeducational high school. The 11 factors the SDQ II was designed to measure were clearly identified in a conventional/exploratory factor analysis and in a confirmatory factor analysis using LISREL. Each scale was reliable (median alpha =.86), and correlations among the factors were small (median r = .17). All of the SDQ II scales were significantly correlated with sex and/or age, though the effect of sex and age were independent of each other and the relationships were small. The effect of sex varied with the particular scale, girls being higher on some, lower on others, and not differing from boys on a third group and on the sum of all the SDQ II scales. This total score, and most of the separate scales had a quadratic age effect where self-concepts started out high, reached their lowest level in year 9, and then improved. At every grade level academic criterion measures were significantly correlated with every academic scale, but not with the nonacademic scales. Verbal criteria were more highly correlated with Verbal self-concept, while math criteria were more highly correlated with Math self-concept. These findings not only demonstrate the multidimensionality of self-concept, but also show that its relationship to other constructs cannot be adequately understood if this multidimensionality is ignored. The findings have important implications for the study of adolescent self-concept, and also support the construct validity of the SDQ II and the Shavelson model upon which it is based.

designed to measure three areas of academic self-concept and four areas of nonacademic self-concept. These seven factors have been identified in numerous conventional (exploratory) factor analyses (e.g., Marsh, Relich & Smith, 1983; Marsh, Barnes, Cairns & Tidman, Note 1) and confirmatory factor analyses (Marsh & Hocevar, Note 2; Marsh & Shavelson, Note 4). Research based upon the SDQ also provides evidence for the construct validity of self-concept in that different areas of self-concept are substantially correlated with inferred self-concepts in these same areas as inferred from ratings by primary school teachers (Marsh, Parker & Smith, 1982) and with academic ability measures (Marsh, Parker & Smith, 1982; Marsh, Relich & Smith, 1983; Marsh, Smith, Butler & Barnes, 1983). The 13 factors which the SDQ III is designed to measured have also been identified in both conventional and confirmatory factor analyses (Marsh & O'Niell, in press).

Age Effects in Self-concept.

Wylie (1979) summarized research conducted prior to 1977 and concluded that there was no convincing evidence for any age effect in overall self-concept -- either positive or negative -- in the age range 6 to 50. She found virtually no age effects in research based upon better-known instruments and results based upon idiosyncratic instruments were divided approximately equally among those showing positive, negative, and no effects. She argued that findings based upon separate components of self-concept were too diverse and too infrequent to warrant any generalizations. Dusek & Flaherty (1981), in a technically sophisticated design, also failed to show systematic age effects in their longitudinal study of adolescent self-concept.

Eshel & Klien (1981) found a sharp decline in general self-concept in a cross-sectional study of self-concepts in grades 1 - 4. However, nearly all of the decline occurred between grades 2 and 3, which suggests the possibility of a lack of equivalence in their age samples. Marsh, et al. (Note 1) found a strikingly linear, decline in self-concept in grades 2 - 5 with nearly all of the SDQ scales. However, one scale, Relations With Parents, which was the most positive scale in grade 2, showed no decline across the grade levels. Marsh proposed a social comparison process whereby the added experience and reality testing which is gained by attending school causes the high reported self-concepts of very young children (perhaps unrealistically high when the average response is nearly 4.5 on a five-point response scale) to drop, but has no effect on the Parents

Multidimensional Adolescent Self-concepts:
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Self-concept is a hypothetical construct whose usefulness must be demonstrated by investigations of its construct validity. Marx & Winne (1978; Winne, Marx & Taylor, 1977) argue that the demonstration of consistent, distinct, and theoretically defensible components of self-concept is prerequisite to the study of how self-concept is related to other constructs. Systematic reviews of self-concept research (e.g., Burns, 1979; Shavelson, Hubbard & Stanton, 1976; Welles & Marwell, 1976; Wylie, 1974; 1979) emphasize the lack of a theoretical basis and the poor quality of measurement instruments used in most studies. Shavelson et al. (1976) reviewed theoretical and empirical research in this field, and used the review as the basis of a self-concept model which incorporates aspects from most theoretical positions. Of particular relevance are Shavelson's assumptions that self-concept is multifaceted, hierarchically arranged, and becomes increasingly multifaceted with age. This theoretical model was the basis for the design of the three SDQ instruments.

The Multidimensionality of Self-concept.

The self-concept dimensions proposed by Shavelson et al. (1976), as well as their hypothesised structure, are heuristic and plausible, but they were not empirically demonstrated. Despite the assumption of multidimensionality of self-concept which is explicit in Shavelson's model and implicit in other research, factor analyses of the most commonly used instruments typically fail to identify the scales which the instrument was designed to measure (see Marsh & Smith, 1982; Shavelson, et al., 1976; Wylie, 1974; 1979). Some researchers (e.g., Coopersmith, 1967; Marx & Winne, 1978) argue that self-concept is so heavily dominated by a general factor that distinct areas of self-concept cannot be differentiated, while others (e.g., Soares & Soares, Note 5, 6) claim that the low correlations between self-concepts in different areas argue against a hierarchical ordering (an issue similar to the debate about the large general factor in general ability research). Not even the multidimensionality of self-concept is universally accepted, let alone the identification of the specific components of self-concept and how they are structured.

The strongest evidence for the multidimensionality of self-concept, and particularly for the facets proposed in the Shavelson model come from work with the SDQ (with preadolescent children) and the SDQ III (with late adolescents). The SDQ was specifically

scale where children have no external basis of comparison. Thus, preadolescent children still feel confident about their relationship with their parents even after they find they are not as good as they once thought in other areas. He also predicted that the extremely high self-concepts on the Parent scale were unlikely to be maintained through the adolescent years.

Sex Effects In Self-concept.

Wylie (1979), in her comprehensive review emphasizing American research conducted prior to 1977, concluded that there was no evidence for sex differences in overall self-concept at any age level. She suggested that differences in specific components of self-concept may be lost when items are summed to obtain a total score. Several Australian studies have found significant sex differences, but these differences may depend upon age, the component of self-concept, and the self-concept instrument (see Marsh & Smith, 1982). Australian research with the SDQ has shown large sex differences in self-concepts of Physical abilities (favoring boys) and Reading (favoring girls), and smaller differences in other areas as well (Marsh, Relich & Smith, 1983; Marsh, et al., Note 1). However, consistent with Wylie's conclusion, there was little or no sex effect in the sum of responses to all the SDQ items. Marsh et al. (Note 1) also demonstrated that while there were age and/or sex effects in each of the SDQ scales, there were no sex-by-age interactions for students in grades 2 - 5.

Relation to Academic Ability.

Self-concept theorists (e.g., Shavelson & Bolus, 1982; Marsh & Parker, in press) argue that academic ability measures should be more highly correlated with academic self-concept than with general self-concept. In the most extensive review of this relationship, Hansford & Hattie (1982) found that measures of ability correlated with general self-concept about .2, but correlated .4 with measures of academic self-concept. Similarly, Bachman (1970) reported that IQ correlated 0.46 with academic self-concept, but only .14 with general self-esteem.

Marsh (e.g., Marsh, Smith, Butler & Barnes, in press) extended this reasoning and argued that academic abilities in particular areas should be most highly correlated with self-concept in the same area, less highly correlated with self-concept in other academic areas, and least highly correlated with self-concepts in nonacademic areas. As an example, Marsh, Relich & Smith (1983) showed that mathematics achievement was substantially correlated with Mathematics self-concept

(.55), less correlated with self-concepts in other academic areas (Reading .21, and School .43), and uncorrelated with self-concepts in four nonacademic areas. According to this logic, the construct validation of self-concept requires that facets be substantially correlated with other variables to which they are theoretically related, but also that they be less correlated with other variables to which they are not theoretically related.

The hierarchical ordering among academic self-concepts in the Shavelson model is similar to hierarchical models of academic abilities. This assumption is also consistent with the Marsh proposal that the self-concept/ability relationship is specific to particular areas of self-concept. However, numerous studies with both the SDQ and the SDQ III have demonstrated that self-concepts in mathematics and verbal areas are nearly uncorrelated, even though measures of mathematical and verbal achievement are substantially correlated with each other and to the corresponding self-concepts (e.g., Marsh & O'Neill, in press). In a recent review of the hierarchical ordering among self-concept facets, and an empirical analysis of responses from the SDQ, Shavelson proposed a modification of his model to account for this separation in the two areas of academic self-concept (Marsh & Shavelson, Note 4) According to this revised model, the SDQ scales form three second-order factors representing nonacademic, academic/verbal, and academic/mathematical self-concepts (also see Marsh & Hocevar, Note 2). These findings clearly demonstrate that the self-concept/academic ability relationship cannot be understood if the multidimensionality of self-concept and academic ability is ignored.

The Present Study.

The purpose of the present investigation is to present results from a new self-concept instrument, the SDQ II, developed specifically for high-school aged adolescents. The SDQ II is based upon the Shavelson model and previous research with both the SDQ and the SDQ III. The SDQ II was administered to students in grades 7 - 12 for whom measures of age, sex, and achievement scores in verbal and mathematical areas were available. Different analyses examined the factor structure proposed to underlie the SDQ II, and determined the relationships between the 11 scales and measures of age, sex and academic ability.

METHOD.

Sample and Procedures.

The total sample for this study consisted of the 901 (53%

females) students attending a coeducational, public high school in Wollongong, a city on the southern edge of metropolitan Sydney, Australia. Areas serviced by this high school represent a wide range of social economic classes, but most are classified as working and middle class. Grade levels in this school, as in most high schools in this state, range from year 7 (mostly 12 year olds) to year 12 (mostly 17 year olds). Typically, in this state, students complete schooling through year 10 which is the normal "leaving age" at which time a School Certificate is awarded. A small percentage of students, who generally have aspirations for higher education, continue on to years 11 and 12. Years 11 and 12 are designed to be a two year program where the curriculum is primarily academic in nature and oriented towards preparation for the Higher School Certificate examinations which are taken in year 12. Since this school had so few students in years 11 (48) and 12 (24), and these years are similar in nature, they are considered to be one grade in this study. Demographic information for students in each grade level, and across the total sample is shown in Table 1.

Insert Table 1 About Here

The Self Description Questionnaire II (SDQ II) was administered by one of the authors of the study, who serves as the school counselor for this high school. It was administered to intact classes during a regularly scheduled class period midway through the academic year. Standardized instructions were read aloud to students and any questions were answered before students completed the questionnaire. Other measures described below were obtained by the school counselor from each student's school record.

Materials.

The SDQ II. The SDQ II is a multidimensional self-concept instrument for which students respond to statements, approximately half of which are negatively worded, on a response scale which varies between "1 -- False" and "6 -- True". The 11 scales that SDQ II is designed to measure are based upon the Shavelson's multifaceted model of self-concept and research with the SDQ and the SDQ III. These scales differ from those measured by the SDQ in that the Peer Relations scale in the SDQ has been divided into Same Sex and Opposite Sex scales, and that scales measuring self-concepts of Emotional Stability and Honesty have been added. The SDQ II scales differ from the SDQ III in that the scales for Religion/Spirituality and Problem

Solving/Creativity from the SDQ III are not represented on the SDQ II. The actual items on the SDQ II were largely adapted from these other two questionnaires. A brief description of the SDQ II scales and example items are as follows:

General Self (GENL) -- a scale based upon the Rosenberg (1965) self-esteem scale and the modification by Bachman (1970). Example items are: "I can't do anything right", "Overall, I have a lot to be proud of", and "Overall, most things I do turn out well."

Mathematics (MATH) -- student perceptions of their mathematical skills/reasoning ability, and their enjoyment/interest in mathematics. Example items are "I get good marks in mathematics", "Mathematics is one of my best subjects", and "I hate mathematics."

Verbal (VERB) -- student perceptions of their verbal skills/reasoning ability and their enjoyment/interest in verbal activities. Example items are: "I get good marks in English", "I hate reading", and "I do badly on tests that need a lot of reading ability".

School (SCHL) -- student perceptions of their ability and enjoyment/interest in school in general. Example items are: "I'm good at most school subjects", "I'm too stupid at school to get into a university", "I'm not very interested in any school subjects".

Physical Abilities (PHYS) -- student perceptions of their skills and interest in sports and physical activities. Example items are: "I'm good at things like sport, gym and dance", "I am lazy when it comes to sports and hard physical exercise", and "I enjoy things like sports, gym and dance."

Physical Appearance (APPR) - student perceptions of their physical attractiveness. Example items are: "I am good looking", "I have a nice looking face", and "I hate the way I look."

Relations With Same Sex (Ssex) and Opposite Sex (Osex) Peers -- these two scales measure student perceptions of their interactions with peers. Within each scale, some items specifically refer to same and opposite sex like "I enjoy spending time with friends of the same sex" and "When I'm alone with members of the opposite sex I feel shy & unsure of myself." Other items refers to boys and girls, and are scored according to the sex of the respondent such as "Boys often make fun of me" and "I do not get along well with girls."

Relations With Parents (PRNT) -- student perceptions of their interactions with their parents. Example items are: "My parents treat me fairly", "I get along well with my parents" and "It is difficult for me to talk to my parents."

Honesty (HONS) -- student perceptions of their honesty and trustworthiness. Example items are: "I am honest", "Cheating on a test is ok if I don't get caught", and "People can count on me to do the right thing."

Emotional Stability (EMOT) -- student perceptions of their emotional stability. Example items are: "I am often depressed and down in the dumps", "I am a nervous person", "I get upset easily."

Academic Criterion Measures. A variety of academic criterion measures were obtained for each student from the school records. A brief summary of each of these is as follows:

IQ -- All students in this school district are administered a standardized intelligence test (Test of Learning Ability, ACER, 1976) during year six. In a few instances, for children transferring from other school districts, the test might have been administered after the start of year seven, or scores from a test judged to be comparable from another school district might be used. The frequency with which this

occurred could not be determined since only the actual IQ score was recorded in the school records.

Reading Ability (Read) -- Students, upon entering the high school, are given the Gapadol (McLeod, 1972), a standardized reading test. Since, this procedure was only instituted recently, these scores are available for only year 7 and 8 students.

Math and English Stream scores (Math & Engl) -- In year 7, the first year of high school, students are classified into ability groupings based upon their IQ score. For this first year only, students are assigned to the same stream in all subjects. In subsequent years students are assigned to separate streams in math and English depending upon their performance in each particular subject. The number of streams varies from year to year (see Table 1) as a function of the number of students and staffing availability. For purposes of this study, the math and English ability streams were taken as measures of academic performance. Students assigned to the highest ability level were given a score of one, those assigned to the next highest ability level a score of 2, and so forth.

Statistical Analysis.

There were almost no missing responses to any of the SDQ II items (less than 1/4 of 1%), and the mean response was substituted for the few missing values which did occur. Since student demographic data were obtained from the school records, there were also relatively few missing values for these variables. There were, however, 50 (6%) of the students who had no IQ score on file, these instances being distributed across the different grade levels (see Table 1). Correlational analyses which were based upon this measure used "pair-wise" deletion for missing data (see Nie, et al., 1975). However, correlations based upon only those cases with no missing scores were nearly identical.

The standardized IQ scores comprised the only academic ability measure on which students from different grade levels could be compared. An ANOVA showed that the grade levels differed in terms of average IQ (see Table 1). However, a Neuman-Kuels test of the pair-wise differences indicated that this difference was due to higher IQ's in years 11 and 12. None of the differences among the other years reached statistical significance at $p < .05$, nor did the difference between IQ's in years 11 and 12. This is consistent with the self-selection which takes place after year 10, and supports the decision to combine students from years 11 and 12 into a single group. However, it also indicates the need for caution in interpreting age effects beyond year 10 since the students in grade level 11/12 are clearly not comparable with the rest of the sample.

This study is the first application of the SDQ II, so more items were included than were intended to be used. Preliminary analyses, based upon 153 items, were used to select items to be included in the final analysis. Selection of items for each scale was based upon item

analysis statistics, retaining at least 10 items for each scale, and maintaining an approximate balance between the number of positively and negatively worded items in each scale. On the basis of these criteria, 122 items were selected. Coefficient alphas were computed for each scale for the total sample and separately for each grade level, using the commercially available SPSS program (Hull & Nie, 1981). The findings from this analysis are presented in Table 2 of the Results section.

Prior to any analyses, responses to negatively worded items were reflected so that a high score represented a high self-concept on all items. Items from each scale were then paired and factor analyses were performed on the total score for each item pair. Thus, the first two items in each scale were summed to form the first item pair, responses to the next two items were summed to form the second item pair, and so forth, forming 61 item-pairs from the 122 items. This procedure of pairing items responses is typically used in factor analyses of responses to the SDQ and the SDQ III. Limitations in the factor analysis procedure (i.e., the SPSS procedure is limited to 100 variables) and cost considerations necessitated this decision. Nevertheless, further advantages result from the use of item pairs (see Marsh, et al., Note 1). In particular, each variable is more reliable, has less unique variance, and is less likely to be affected by the idiosyncratic wording of a particular item when the analysis is performed on responses to item pairs. The SPSS procedure was also used to create factor scores to represent each scale (see Nie, et al., 1976). A confirmatory factor analysis of the responses to the SDQ II was then performed with the commercially available LISREL V program (Joreskog & Sorbom, 1981).

A preliminary MANOVA was used to determine the effects of age and grade level on the SDQ II scales. Based upon this analysis, separate ANOVAs were performed on each of the SDQ II scales, and a polynomial breakdown was used to partition the effect of grade level into linear, quadratic and cubic components. These analyses were performed with the commercially available SPSS program (Hull & Nie, 1981).

In the final analyses, the relationships between the SDQ II scales and academic criterion scores (IQ, Reading skills, Math and English stream scores) were determined. Since the available criterion scores (except IQ), and the meaning of ability streams, varied for different grade levels, this analysis was performed separately for each grade level.

RESULTS

Reliability & Factor Analyses.

Reliability. It was hoped to be able to select a subset of items such that each SDQ II scale would have a coefficient alpha of at least 0.80. This was accomplished with all but the Emotional Stability scale (see Table 2) where the alpha was only 0.78. For the total sample, alphas for the 11 SDQ II scales varied between 0.78 and 0.90 (median alpha = 0.86).

Insert Table 2 About Here

Coefficient alphas were also computed separately for each grade level (see Table 2). Despite the relative homogeneity of students in the year 11/12 sample, the coefficient alphas tended to be slightly higher (median alpha = 0.89) for this group. Coefficient alphas in the other grade levels were similar to each other (median alphas =0.84, 0.86, 0.87, and 0.85 for years 7 - 10 respectively). The size of the alphas is one indication of the appropriateness of the SDQ II for each of the year levels considered in this study.

Conventional Factor Analysis. Results of the conventional/exploratory factor analysis (see Table 3) clearly identify the 11 scales the SDQ II was designed to measure. For nearly all of the 61 item pairs, factor loadings are high on the scale each was designed to measure (target loadings), and low on other scales (nontarget loadings). No target loading is less than 0.20 and 94% are greater than 0.4. None of the nontarget loadings is greater than 0.4 and 98% are less than 0.2. Thus, the pattern of factor loadings provides clear support for the scales which the SDQ II was designed to measure.

Insert Table 3 About Here

Correlations among the oblique factors (see Table 3) tend to be small, varying between -.06 and +.35. The highest correlations occur between the General Self and other scales (median r = 0.20), between the School scale and the other two academic scales (0.33 & 0.30), and between the Physical Appearance and Opposite Sex scales (r =0.33). As part of this factor analysis, factor scores were computed (see Nie, et al., 1976) and these were used in subsequent analyses. The pattern of correlations among these factor scores is similar to that shown in Table 3, though the magnitude is somewhat higher (median r = 0.17 vs. 0.13). The 11 factor scores were correlated with scale scores determined by simply summing the unweighted responses of items

designed to measure each scale. The correlations between the factor scores and the matching scale scores were extremely high (median r = 0.97) and further demonstrate the clarity of the factor structure. The 11 factor scores were also correlated with each other separately for each grade level and the median correlations were 0.12, 0.17, 0.18, 0.17, and 0.17 for years 7 through 11/12. Thus, there is no evidence that adolescent self-concepts become more distinct (i.e., less correlated) with age, as suggested in the Shavelson model.

Confirmatory Factor Analysis (CFA). In CFA, models are specified by fixing or constraining elements in three matrices which are conceptually similar to matrices resulting from conventional factor analyses. These are:

1) LAMBDA Y, a matrix of factor loadings;

2) PSI, a matrix of correlations among factors;

3) THETA, a diagonal matrix of error/uniqueness terms which are conceptually similar to one minus the communality estimates in common factor analysis.

A full discussion of CFA is beyond the scope of this paper (see Jorskog & Sorbom, 1981; Jackson & Borgotta, 1981; Marsh & Hocevar, Note 2). However, the pattern of parameters can be seen by examining the results in Table 4. All coefficients of "1" or "0" are fixed (i.e., predetermined in a manner which defines the model) and not estimated as part of the analysis, while all other parameters are free to be estimated. For this problem 61 measured variables are used to define 11 factors. The free parameters are the 61 factor loadings in LAMBDA, the 55 correlations in PSI, and the 61 error/uniquenesses in THETA. This model is very restrictive in that each measured variable is allowed to load on one and only one factor, and represents an ideal of "simple structure."

Insert Table 4 About Here

The LISREL V program, after testing for identification, attempts to minimize a maximum likelihood function which is based upon differences between the original and reproduced correlation matrix, and provides an overall chi-square goodness-of-fit test (Joreskog & Sorbom, 1981; Maruyama & McGarvey, 1980). However, for large, complex problems based upon large sample sizes, this value will nearly always be statistically significant, and alternative indications of goodness-of-fit are employed. The most commonly employed alternative is the ratio of the chi-square to the degrees of freedom (df). However, this value is still directly related to the sample size such that the same

solution will result in a larger ratio when based upon a larger sample size. Other alternatives have been developed which are not a function of the sample size. LISREL V computes the root mean square residual (RMS) which is based upon the residual covariances -- the differences between the original and reproduced correlation matrix in this example. Bentler & Bonnett (1980) describe coefficient d which scales the observed chi-square along a scale which varies from zero to 1.0. The zero-point represents the chi-square obtained from a null model and the 1.0 represents a perfect fit. Thus, the index is like an estimate of the variance explained or a reliability coefficient.

The parameter estimates (see Table 4) indicate that each of the SDQ II factors is well defined in that every factor loading is large and statistically significant. Despite the large sample size, the chi-square/df ratio (2.79) is small. The values of coefficient d (.84) and RMS (.048) are also indicative of a good fit. Hence, even this restrictive model provides a good fit to the data.

Sex and Age Effects.

In a preliminary analysis, a MANOVA was performed across all 11 scales to determine the effects of sex and age. Across the 11 scales, the sex-by-age interaction was not statistically significant, nor did it depend upon the particular area of self-concept. However, the effect of sex and the effect of age each varied with the particular scale. Consequently, separate ANOVAs were conducted to determine the effect of sex and age on each of the SDQ II scales (see Table 5). As in the overall analysis, the sex-by-age interaction failed to reach statistical significance in any of these separate ANOVAs.

Insert Table 5 About Here

Sex differences are statistically significant for 8 of the 11 scales (see Table 5), but the magnitude and direction of the effect varies with the particular scale. For five of the scales, self-concepts are higher for boys than girls (General-Self, Math, Physical Ability, Physical Appearance, and Emotional Stability), while for three other scales the direction is reversed (Verbal, Same Sex and Honesty). For the sum of the three academic scales (Total Academic) and the sum of all 11 scales (Total Self), the effect of sex is not statistically significant. Because of the large sample size, even small effects are statistically significant. Inspection of Table 5 indicates that sex differences account no more than 9% of the variance in any of the scales.

Age effects are statistically significant for all but the

Emotional Stability factor (see Table 5). In order to further examine the nature of this relationship, the age effects were partitioned into linear, quadratic and cubic components. Only for the two peer relationship scales are the age effects primarily linear with, particularly for the Opposite Sex scale, self-concepts showing an increase with age. The linear effects were also significant for the Physical Appearance, Parents and Honesty scales, though the quadratic component was significant and larger for each of these. Hence, the linear component indicated that self-concepts declined with age for the Parents scale, but improved for the Honesty and Physical Appearance scales. However, for these three scales, as well as five others, there was a significant quadratic component. In each instance where there was a significant quadratic effect, self-concepts were highest in grades 7, 11 and 12, and nearly always lowest in year 9. The nature of this quadratic trend was also clearly evident in the Total Academic and Total Self scores. It is important to note the the low-point in self-concepts occurs in year 9, and that it starts to improve in year 10. Consequently, the unrepresentative sample of students in the year 11/12 sample is not the cause of this nonlinear trend. The magnitude of the age effects accounts no more than 5.6% of the variance in any of the scales.

Correlations With Academic Criteria.

It was necessary to examine the relationship between the academic criteria and self-concept scales separately for each grade level, since the criteria and their interpretation varied for the different grade levels. Nevertheless, some generalizations can be made across the grade levels. At all five grade levels, each of the academic self-concepts and their total are significantly correlated with the academic criterion measures (see Table 6). These 20 multiple R's range from 0.20 to 0.55 (median multiple R = 0.38). Of the 40 Multiple R's (median = 0.18) relating the academic criterion to nonacademic scales, only eight reach statistical significance and none is larger than 0.3. This pattern of findings shows the specificity of the self-concept ratings in that academic criterion are primarily related to academic self-concepts and not to the nonacademic areas of self-concept.

Insert Tables 6 & 7 About Here

There is also strong evidence for the specificity of self-concept within the different academic areas. While the School scale is moderately correlated with both the Math and the Verbal scales, the

Math and Verbal scales are not significantly correlated to each other in the total sample or at any grade level. In grades 7 and 8, the only two grades where a standardized reading score was available, reading achievement is significantly correlated with the Verbal scales (r's = 0.34 & 0.21 , $p < .01$) but not with the Math scales (r's = 0.12 & 0.06). Similarly, for grades where math and English classes were streamed separately, the math score is most highly correlated with Math self-concept and the English score is most correlated with Verbal self-concept.

Math criteria are more highly correlated with Math self-concepts than Verbal self-concepts, while Verbal criteria are more highly correlated with the Verbal self-concepts. However, this degree of specificity is several limited by the extent of colinearity between the verbal and math criterion scores. The correlation between the math and English stream scores is 1.0 in grade 7 (where subjects are not streamed separately), 0.95, 0.89, and 0.89 in grades 7 - 10, and 0.47 in the year 11/12 group.

In order to further examine this specificity, a new set of multiple regressions was performed correlating the two academic stream scores with each of the academic self-concepts in years 7 - 11/12 (see Table 7). The multiple R's are each statistically significant, and nearly as large as those in Table 6 (where multiple regressions include the IQ score). In Table 7 the standardized beta weights for each of the stream scores are shown instead of the first-order correlations as in Table 6. For Math self-concepts in every grade level the direction of the math stream score is significant and positive, while the direction of the English stream score is significant and <u>negative.</u> Paradoxically, once the effect of math achievement is controlled for, having a higher English achievement actually leads to a lower self-concept in math. Conversely, for Verbal self-concepts, the direction of the English stream score is positive, while the direction of the math stream score in negative. For the School and total academic scores, there is no instance when both the math and English stream scores add significantly to the multiple R, let alone have beta weights that are significant and in the opposite direction. The extent of the specificity of this self-concept/academic ability relationship is quite remarkable, given the large correlations between the English and math stream scores. These findings also demonstrate the clear separation between Verbal and Math self-concepts, even when the abilities in these two areas are

substantially correlated.

DISCUSSION

The SDQ II is designed to measure 11 areas of self-concept, and each of these areas is clearly identified in conventional and confirmatory factor analyses. All of the scales are reliable and correlations among the scales are small, demonstrating the distinctiveness of the different areas of self-concept. The effects of age and sex, though independent of each other, each varied with the particular area of self-concept which was considered. While sex and/or age was significantly related to each of the SDQ II dimensions, the effects were not large and none accounted for more than 9% of the variance in any dimension. The Total Self score, the sum of responses to all the SDQ II items, was not significantly correlated with sex. The effect of age on the total score, and most of the individual scales, was primarily nonlinear with self-concepts being most positive in years 7, 11 and 12, and lowest in year 9. Only with the two peer relationship scales, where self-concepts generally improved with age, was the age effect primarily linear.

The set of academic criterion measures was significantly correlated with each of the academic self-concepts for all grade levels, while correlations with the nonacademic self-concepts were generally not significant. The Math and Verbal scales were nearly uncorrelated with each other, though each was substantially correlated with the School scale. While verbal and math achievement scores were substantially correlated with each other, math stream score was more highly correlated with Math self-concept than with Verbal self-concept, and the English stream score was more highly correlated with Verbal self-concept than with Math self-concept.

These findings have important implications for a number of theoretical issues in self-concept research. The clarity of the factor structure support both the construct validity of responses to the SDQ II and the Shavelson model upon which it was based. While the pattern of correlations among the SDQ II factors suggests that some higher-order factors may exist, the size of the correlations argues against any strong hierarchical ordering of the SDQ II dimensions.

While comparisons among the different SDQ instruments are difficult to make, correlations among the SDQ II scales seem to be smaller than those for the SDQ (the preadolescent form) and larger than those for the SDQ III (the university-age form). Nevertheless, there is no indication that the magnitude the of correlations among

the SDQ II scales varies over the age range considered in this study. Thus, while adolescent self-concepts seem to be more differentiated than those of preadolescents, they do not appear to become more differentiated during adolescent years.

Wylie (1979) argued that there was no convincing support for either sex or age effects in total self-concept. The sex differences found here agree with that conclusion for the total self score, but also show that there are sex differences in specific scales, some favoring boys and some favoring girls, which cancel each other out when the scores are summed across all scales. These conclusions are similar to those based upon responses to the SDQ by preadolescent children. The age effects reported here do not support Wylie's conclusion even for the total score. In the total score and most of the individual scales, there is a significant nonlinear age trend. However, many of the studies in Wylie's review only looked for linear effects. Our results suggest that the linear relationship could be nonsignificant, positive or negative, depending upon the particular age range which was examined.

Marsh et al. (note 1) examined sex and age effects in grades 2 - 5 with the SDQ. Though not strictly comparable, it is interesting to contrast the findings from the two studies. In both studies the effects of sex and age were statistically independent in that there was no sex-by-grade interaction. In neither study did the effects of age or sex account for more than 10% of the variance in any of the self-concept scales. During preadolescent years, the effect of age was primarily linear with self-concept declining with age. Here however, the level of self-concept appears to reach its lowest point with year 9 students and to rise in year 10 and the year 11/12 samples.

No sex differences occurred for the sum of responses to all items in either the preadolescent or adolescent samples, though sex effects for particular scales differed somewhat in the two studies. Preadolescent girls had higher self-concepts than boys in the Reading, School and Total academic scales and did not differ in the Math scale. Adolescent girls still have higher Verbal self-concept scores but do not differ from boys in the School and Total academic scales, and were significantly lower in the Math scale. Thus, relative to boys, girls' self-concepts in academic areas (except perhaps Verbal self-concept) seem to have declined.

For preadolescents the only nonacademic area to have a large sex

effect was Physical Abilities, where boys had higher self-concepts. That difference, while still statistically significant, was small for adolescents. Perhaps this can be explained by differences in the wording of the items. The scale on the SDQ II was specifically designed to include references to physical activities that were appropriate to girls as well as boys. On the SDQ, for example, children indicated whether they were good at sports and games, while on the SDQ II a similar item asked if they were good at things like sports, gym and dance. Also, it may be that preadolescent girls compare their physical abilities with boys in forming their Physical Ability self-concept, while adolescent girls compare themselves only with other girls.

For adolescents, the largest sex effects occurred with the Physical Appearance and Same Sex scales, whereas Physical Appearance was not significant for preadolescents and the Peer Relations scale which showed no difference was not broken into same and opposite sex on the SDQ. Thus, relative to boys, girls may have improved their self-concepts about relations with same-sexed peers but declined in terms of their self-concepts of Physical Appearance.

While the sex differences are independent of age <u>within</u> the preadolescent years and <u>within</u> the adolescent years there may differences in the sex effects <u>between</u> the two age groups. The most striking appear to be shifts in the academic scales, the Same Sex scale, the Physical Appearance scale, and perhaps the Physical Ability scale. The shift in Math self-concept is consistent with other research (cf., Meece, et al., 1982) which finds that while girls and boys have similar math self-concepts during primary school years, girls have lower self-concepts in junior and senior high school years. Further research, based upon both longitudinal and cross-sectional comparisions, is needed to clarify this apparent sex-by-age interaction.

The relationship between self-concept and academic achievement clearly depends upon the area of self-concept which is considered. The distinctiveness of the pattern of relationships shown here not only argues for the clear separation between academic and nonacademic self-concept, but also for the separation of academic self-concepts in verbal and mathematical areas. These findings replicate findings obtained with both the SDQ and the SDQ III, and also support Shavelson's revision of his hierarchical model (Marsh & Shavelson, Note 4).

It is important to understand why Verbal and Math self-concepts are nearly uncorrelated even though actual abilities in these areas are highly correlated. We propose that this extreme separation is due to a within-set frame of reference effect. According to this proposal, students compare their own relative abilities in different academic areas, as well as comparing these abilities with those of other students. Consider, for example the student who is below average in both verbal and math skills, but is better at math than English. For this student, his math skills are below average relative to other students (an external comparison) but <u>higher</u> than average relative to his other academic skills (an internal comparison). Depending upon how these two components are weighted, the student may have an average or even above-average self-concept in math. The external comparison process will lead to a positive correlation between Verbal and Math self-concepts, the internal comparison process will lead to a negative correlation, and the joint operation of both will produce relatively uncorrelated self-concepts which are consistent with empirical findings. This model is also consistent with the reversal of signs in beta weights observed in Table 7. According to this proposal a high self-concept in math will be more likely when math skills are good (the external comparison) and when the math skills are much better than verbal skills (the internal comparison). Thus, once the effect of math skills is controlled for, it is the <u>difference</u> between math and verbal skills which contributes to the prediction of math self-concept. Hence, the sign of the beta weight for verbal skills should be negative. The ability of this model to account for these seemingly paradoxical results makes it quite appealing, though it needs further investigation.

Another sort of frame-of-reference effect, described by Marsh (Marsh & Parker, in press; Marsh, in press) is likely to limit the size of correlations between academic ability and academic self-concepts in this study. According to this model, students appraise their own academic ability, compare this with the observed abilities of other children in their frame of reference, and use this relativistic impression of their ability as one basis for forming their academic self-concept. Thus, a given child will see him/herself to be relatively more able in a low-ability school and will form a more favorable self-concept than if the same child attends a high-ability school. The model was strongly supported in a study based upon preadolescent self-concepts for sixth grade students in high and

low-ability schools which were not selective on other than the basis of geographic locales. There, the basis of comparison -- other students in the same school who live in the same geographic area -- is clear. To the extent that these findings generalise to the present study, a student near the top of one stream might be expected to have a higher academic self-concept than if the same student were near the bottom of the next more able stream. However, the frame of reference actually used by students (i.e., the school, other students in their stream, etc.) and the additional effect of being "labeled" according to stream, make the application of this model difficult. Unfortunately, this model cannot be tested in this study. Since students are streamed according to ability, there is virtually no overlap in abilities in the different streams, and we have no measure of achievement by students within each of the academic streams. However, to the extent that this process does operate, it will lower academic self-concept/ability correlations.

Findings described here clearly demonstrate the multidimensionality of self-concept. The relationship between self-concept and other variables such as sex, age and academic achievement cannot be adequately understood if this multidimensionality is ignored. The failure of most research to recognize this multidimensionality stems not from the inherent nature of self-concept, but from the poor quality of measurement instruments and theoretical models which have been employed. We suspect that these two factors account for the inconsistent, contradictory, largely null pattern of relationships between self-concept and other constructs which typically results from systematic reviews of the self-concept literature (e.g., the conclusions reached by Wylie).

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TABLE 2

Scale Reliabilities At Each Grade Level and For The Total Sample

Scale (number of items)	Grade 7 (n=236)	Grade 8 (n=223)	Grade 9 (n=181)	Grade 10 (n=189)	Grade 11/12 (n= 72)	Total (n=901)
GENL(16)	.86	.89	.91	.88	.94	.88
MATH(10)	.88	.91	.88	.92	.94	.90
VERB(12)	.81	.80	.82	.84	.89	.82
SCHL(10)	.78	.83	.81	.84	.90	.83
PHYS(10)	.84	.86	.87	.85	.87	.86
APPR(10)	.87	.91	.90	.88	.91	.89
SEX(12)	.88	.91	.89	.90	.93	.90
SSEX(12)	.80	.79	.82	.77	.86	.82
PRNT(10)	.87	.86	.89	.89	.86	.87
HONS(10)	.82	.86	.87	.82	.86	.85
EMOT(10)	.75	.75	.80	.81	.83	.78
Total (32) Academic	.86	.90	.87	.88	.92	.88
Total (122) Self	.93	.94	.94	.94	.94	.94

Note: Reliability estimates are coefficient alphas computed with the commercially available SPSS procedure (Hull & Nie, 1981).

TABLE 1

Characteristics of Each Grade Level and the Total Sample

	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11/12	Total
Sample Size	236	223	181	189	72	901
Age Mean	12.3	13.4	14.4	15.3	16.7	
SD	.5	.5	.6	.5	.8	
% Females	50%	44%	41%	47%	57%	47%
IQ Mean	99.6	100.7	101.3	102.2	110.6	101.6
SD	13.9	14.3	12.9	11.4	11.4	13.4
Valid N	225	219	161	180	66	851
Number of Ability Streams	10	10	10	7	3	

TABLE 3

Conventional Factor Analysis Estimates For Parameters for the SDQ II

Oblique Factor Pattern Matrix After Rotation

Variables	GENL	MATH	VERB	SCHL	PHYS	APPR	OSEX	SSEX	PRNT	HON	EMOT	commu-nality
Genl1	32	05	05	07	01	31	-06	15	01	06	19	46
Genl2	34	10	00	10	03	34	-02	11	11	00	11	50
Genl3	41	-11	-07	32	18	11	08	03	01	02	00	53
Genl4	48	02	03	18	04	06	05	07	08	03	13	53
Genl5	50	-03	-01	34	11	01	04	-04	01	-01	-03	51
Genl6	55	-05	-01	10	10	14	-02	01	07	10	08	56
Genl7	62	03	02	03	06	08	10	01	17	01	12	68
Genl8	76	03	-02	04	02	00	10	00	07	-01	04	70
Math1	02	73	-03	09	03	04	06	-06	06	10	-01	64
Math2	-09	65	-14	31	02	05	-02	-05	-04	-05	15	66
Math3	-05	64	-14	35	00	01	-01	05	-06	-01	13	69
Math4	10	70	04	02	08	01	-01	-03	09	10	-09	61
Math5	05	80	-08	12	03	00	01	-02	00	07	-06	74
Verb1	-07	-12	54	17	04	02	09	00	07	12	-04	44
Verb2	10	-07	60	09	04	-09	11	-04	08	06	-12	47
Verb3	-11	-13	56	36	03	08	-05	03	04	05	-03	57
Verb4	11	01	64	00	00	-03	-07	11	00	09	-02	51
Verb5	05	-04	58	15	07	-01	05	08	05	00	10	52
Verb6	-04	06	48	10	-02	08	-03	03	-05	00	30	40
Schl1	05	17	18	42	-04	11	-04	02	-02	11	03	42
Schl2	14	33	29	21	06	-07	-03	05	07	09	03	46
Schl3	08	22	16	55	01	04	-10	01	08	00	01	61
Schl4	06	24	10	42	02	09	-05	06	04	08	05	46
Schl5	17	34	29	28	06	-04	-01	05	11	13	-05	58
Phys1	-01	06	-01	05	56	-04	15	09	00	-03	06	40
Phys2	-02	00	-02	02	75	-02	03	03	07	13	00	62
Phys3	05	-04	-06	13	13	05	06	01	-03	-02	01	65
Phys4	11	05	09	-07	71	09	-04	-03	02	-01	02	58
Phys5	06	02	05	04	77	04	-01	03	01	-03	01	67
Appr1	00	-02	-05	21	02	66	18	04	00	-01	-05	67
Appr2	00	02	-05	04	05	71	13	-05	07	-01	05	63
Appr3	12	00	-02	02	01	72	05	02	-05	00	06	66
Appr4	06	-02	02	05	07	59	22	09	-01	01	02	59
Appr5	21	01	03	06	09	65	05	-03	00	-03	06	67
Osex1	01	-03	-01	07	10	21	65	04	-01	03	00	64
Osex2	05	04	-01	06	05	26	65	06	-02	-07	-01	69
Osex3	02	-02	02	06	04	13	66	02	-02	-07	-01	56
Osex4	03	-03	-03	11	06	07	64	10	-07	01	05	57
Osex5	13	00	04	-01	06	14	72	08	-06	-01	03	75
Osex6	10	05	04	-08	05	06	70	09	-02	-05	11	64
Ssex1	04	06	12	-07	02	01	-06	52	07	01	10	34
Ssex2	-04	-03	01	12	03	08	02	63	-01	03	-03	46
Ssex3	02	-06	-06	12	06	02	16	48	05	09	-08	36
Ssex4	14	-01	-01	07	04	-05	11	61	-04	04	03	50
Ssex5	04	-02	03	01	04	01	01	78	02	02	00	67
Ssex6	00	-08	00	00	09	06	16	54	08	-04	18	50
Prnt1	03	-03	-06	17	00	-01	-01	-05	73	02	01	59
Prnt2	02	-02	-07	16	05	01	-06	00	75	08	-03	66
Prnt3	02	05	00	-04	00	02	-06	00	74	03	15	63
Prnt4	14	03	06	-06	03	04	-03	10	56	06	14	50
Prnt5	13	01	09	-05	-02	-01	01	09	65	07	-02	54
Hons1	-05	00	-04	12	-01	-01	00	-03	03	72	03	55
Hons2	02	-02	-03	10	02	-01	-02	04	03	72	05	58
Hons3	-02	16	12	16	00	05	08	03	11	66	06	56
Hons4	02	06	11	08	04	-04	-01	03	04	72	05	60
Hons5	15	-04	-03	-19	-02	-02	05	05	03	60	04	53
Emot1	04	-06	00	-14	09	-02	10	03	20	04	46	42
Emot2	02	-06	-01	-06	01	09	-04	00	07	07	56	39
Emot3	12	-03	-05	-13	07	-04	03	-03	00	00	61	47
Emot4	-01	08	01	12	01	09	01	04	-01	13	66	50
Emot5	13	03	04	-04	00	-04	10	10	16	-01	56	51

TABLE 3 (continued)
Conventional Factor Analysis Estimates For Parameters for the SDQ II

Correlations Among Factors

Factors	GENL	MATH	VERB	SCHL	PHYS	APPR	OSEX	SSEX	PRNT	HONS	EMOT
GENL	1										
MATH	10	1									
VERB	11	01	1								
SCHL	35	33	30	1							
PHYS	23	06	07	19	1						
APPR	30	05	00	25	14	1					
OSEX	18	-06	00	11	19	33	1				
SSEX	17	-03	13	14	15	13	21	1			
PRNT	26	06	10	15	08	04	-05	12	1		
HONS	12	14	18	19	05	00	-06	11	21	1	
EMOT	23	07	07	15	11	18	09	16	20	13	1

Note: Coefficients are presented without decimal points.
Coefficients which appear in the boxes the factor pattern matrix are the factor loadings of each variable on the factor it was designed to measure (target loadings).

TABLE 4
Confirmatory Factor Analysis Estimates For Parameters for the SDQ II

Variables	Factor Loading Matrix (LAMBDA)											uniqueness/ error
	GENL	MATH	VERB	SCHL	PHYS	APPR	OSEX	SSEX	PRNT	HON	EMOT	
Genl1	62*	0	0	0	0	0	0	0	0	0	0	61*
Genl2	67*	0	0	0	0	0	0	0	0	0	0	55*
Genl3	68*	0	0	0	0	0	0	0	0	0	0	54*
Genl4	72*	0	0	0	0	0	0	0	0	0	0	49*
Genl5	66*	0	0	0	0	0	0	0	0	0	0	57*
Genl6	73*	0	0	0	0	0	0	0	0	0	0	46*
Genl7	81*	0	0	0	0	0	0	0	0	0	0	35*
Genl8	78*	0	0	0	0	0	0	0	0	0	0	39*
Math1	0	80*	0	0	0	0	0	0	0	0	0	36*
Math2	0	79*	0	0	0	0	0	0	0	0	0	38*
Math3	0	80*	0	0	0	0	0	0	0	0	0	36*
Math4	0	74*	0	0	0	0	0	0	0	0	0	45*
Math5	0	86*	0	0	0	0	0	0	0	0	0	27*
Verb1	0	0	65*	0	0	0	0	0	0	0	0	58*
Verb2	0	0	65*	0	0	0	0	0	0	0	0	58*
Verb3	0	0	73*	0	0	0	0	0	0	0	0	47*
Verb4	0	0	67*	0	0	0	0	0	0	0	0	56*
Verb5	0	0	71*	0	0	0	0	0	0	0	0	49*
Verb6	0	0	54*	0	0	0	0	0	0	0	0	71*
Osex1	0	0	0	63*	0	0	0	0	0	0	0	61*
Osex2	0	0	0	69*	0	0	0	0	0	0	0	52*
Osex3	0	0	0	75*	0	0	0	0	0	0	0	44*
Osex4	0	0	0	66*	0	0	0	0	0	0	0	56*
Osex5	0	0	0	77*	0	0	0	0	0	0	0	41*
Phys1	0	0	0	0	62*	0	0	0	0	0	0	61*
Phys2	0	0	0	0	76*	0	0	0	0	0	0	43*
Phys3	0	0	0	0	80*	0	0	0	0	0	0	37*
Phys4	0	0	0	0	74*	0	0	0	0	0	0	45*
Phys5	0	0	0	0	82*	0	0	0	0	0	0	33*
Appr1	0	0	0	0	0	81*	0	0	0	0	0	35*
Appr2	0	0	0	0	0	78*	0	0	0	0	0	39*
Appr3	0	0	0	0	0	78*	0	0	0	0	0	39*
Appr4	0	0	0	0	0	77*	0	0	0	0	0	41*
Appr5	0	0	0	0	0	80*	0	0	0	0	0	36*
Osex1	0	0	0	0	0	0	79*	0	0	0	0	37*
Osex2	0	0	0	0	0	0	83*	0	0	0	0	31*
Osex3	0	0	0	0	0	0	73*	0	0	0	0	46*
Osex4	0	0	0	0	0	0	75*	0	0	0	0	44*
Osex5	0	0	0	0	0	0	87*	0	0	0	0	25*
Osex6	0	0	0	0	0	0	77*	0	0	0	0	41*
Ssex1	0	0	0	0	0	0	0	56*	0	0	0	69*
Ssex2	0	0	0	0	0	0	0	65*	0	0	0	58*
Ssex3	0	0	0	0	0	0	0	58*	0	0	0	67*
Ssex4	0	0	0	0	0	0	0	69*	0	0	0	52*
Ssex5	0	0	0	0	0	0	0	79*	0	0	0	37*
Ssex6	0	0	0	0	0	0	0	68*	0	0	0	54*
Prnt1	0	0	0	0	0	0	0	0	74*	0	0	46*
Prnt2	0	0	0	0	0	0	0	0	80*	0	0	37*
Prnt3	0	0	0	0	0	0	0	0	78*	0	0	40*
Prnt4	0	0	0	0	0	0	0	0	69*	0	0	52*
Prnt5	0	0	0	0	0	0	0	0	72*	0	0	48*
Hons1	0	0	0	0	0	0	0	0	0	72*	0	48*
Hons2	0	0	0	0	0	0	0	0	0	76*	0	43*
Hons3	0	0	0	0	0	0	0	0	0	72*	0	49*
Hons4	0	0	0	0	0	0	0	0	0	77*	0	41*
Hons5	0	0	0	0	0	0	0	0	0	69*	0	52*
Emot1	0	0	0	0	0	0	0	0	0	0	66*	56*
Emot2	0	0	0	0	0	0	0	0	0	0	61*	63*
Emot3	0	0	0	0	0	0	0	0	0	0	66*	57*
Emot4	0	0	0	0	0	0	0	0	0	0	61*	63*
Emot5	0	0	0	0	0	0	0	0	0	0	72*	48*

TABLE 4 (continued)
Confirmatory Factor Analysis Estimates For Parameters for the SDQ II

Correlations Among Factors (PSI)

Factors	GENL	MATH	VERB	SCHL	PHYS	APPR	OSEX	SSEX	PRNT	HONS	EMOT
GENL	1										
MATH	31*	1									
VERB	37*	08	1								
SCHL	63*	68*	66*	1							
PHYS	48*	19*	24*	33	1						
APPR	64*	19*	17*	31*	35*	1					
OSEX	47*	06	16*	15*	37*	68*	1				
SSEX	43*	02	34*	30*	33*	33*	44*	1			
PRNT	50*	18*	26*	41*	20*	15*	00	26	1		
HONS	31*	27*	38*	48*	14*	06	-03	23*	40	1	
EMOT	60*	20*	28*	38*	30*	37*	31*	40*	46*	33*	1

* p < .01
Note: Parameter values of 0 and 1 were fixed and not estimated in the analysis. The chi-square for the model is 4787 with df=1714, or a chi-square/df ratio of 2.79. The residual mean square is .048. A null model had a chi-square of 30,638 with df=1830. Thus, coefficient d is 0.844. These goodness-of-fit indicators demonstrates that the proposed model describes the data well.

TABLE 5
Effects (% Variance Explained) of Age and Sex on Self-concepts

	Sex Effect	Age Effect	Age Effect Linear	Age Effect Quadratic	Age Effect Cubic
GENL	2.1%**	1.6%**	ns	0.9%**[c]	ns
MATH	2.2%**	1.8%**	ns	1.5%**[c]	ns
VERB	3.5%**[a]	1.4%*	ns	0.5%*[c]	0.6%*
SCHL	ns	1.1%*	ns	0.8%*[c]	ns
PHYS	0.6%*	1.6%**	ns	0.9%	ns
APPR	8.9%**	1.7%**	0.4%*[b]	1.2%**[c]	ns
OSEX	ns	5.6%**	3.2%*[b]	ns	ns
SSEX	6.8%**[a]	1.4%*	1.2%*[b]	ns	ns
PRNT	ns	3.5%**	0.9%*	1.1%**[c]	ns
HONS	3.1%**[a]	4.6%**	0.9%*[b]	3.7%**[c]	ns
EMOT	0.7%*	ns	ns	ns	ns
Total Academic	ns	2.0%	ns	1.5%*[c]	ns
Total Self	ns	3.1%	0.6%*[b]	2.6%**[c]	ns

* p < .05; ** p < .01

a - denotes sex differences where females had higher self-concepts.
b - denotes age effects where the linear component showed an increase in self-concept with age.
c- denotes age effects wher the quadratic component indicates a 'U-shaped' relationship where self-concepts first decrease with age and then increase.

Note: Effect sizes are defined as SSeffect/SStotal x 100%.

TABLE 6

Correlations Between Self-concepts and Academic Criteria

Academic Criterion Scores	Self-concept Scores												
	GENL	MATH	VERB	SCHL	PHYS	APPR	OSEX	SSEX	PRNT	HON	EMOT	Total Acad	Total Self
Grade 7													
IQ	05	05	28	18	03	03	-16	09	08	17	22	24	19
Engl	11	13	25	21	10	05	-14	11	11	20	23	28	26
Read	09	12	34	19	-04	-01	-20	06	10	17	14	30	17
Mult R	17	20*	35**	21*	22*	11	21*	12	11	20*	23**	31**	27**
Grade 8													
IQ	-04	07	14	10	-06	11	-02	23	-06	06	23	14	14
Math	-01	18	13	16	02	11	-07	24	-01	14	18	21	19
Engl	-03	10	20	13	01	05	-09	23	-01	14	19	19	16
Read	-04	06	21	05	-13	06	-04	16	-04	12	18	14	11
Mult R	08	30**	31**	21*	24*	25**	16	24**	12	20	23*	23*	20
Grade 9													
IQ	02	07	30	25	-09	-05	-11	08	-17	-08	15	29	07
Math	06	27	15	05	-08	-02	-13	03	-07	08	05	36	13
Engl	05	08	25	28	-07	-05	-12	12	-09	03	-03	29	08
Mult R	14	41**	34**	36**	09	09	13	18	18	20	30**	38**	14
Grade 10													
IQ	-01	18	27	21	-06	06	-04	-02	06	07	14	31	16
Math	-03	45	10	32	03	03	-08	05	03	10	08	41	21
Engl	02	26	26	31	01	04	-08	13	12	15	05	38	24
Mult R	10	55**	39**	33**	13	07	10	24*	20	17	18	41**	24*
Grade 11/12													
IQ	00	14	35	27	11	07	-02	17	-09	-02	24	35	22
Math	17	34	14	32	00	10	-07	21	05	-11	19	38	25
Engl	15	20	35	22	14	24	09	26	03	-07	11	17	23
Mult R	29	53**	45**	34*	18	25	15	28	17	13	25	41**	29

* p < .05; **p < .01
Note: See Method section for the description of the academic criterion scores and the grade levels where each was available.

TABLE 7

Standardized Beta Weights From the Multiple Regressions Relating Academic Self-concepts to Academic Criterion Scores

	MATH	VERB	SCHL	TOTAL ACADEMIC
Grade 8				
Math	.86**	-.58**	.43*	.34
Engl	-.71**	.75**	-.28	-.13
Mult R	.29**	.27**	.19*	.22**
Grade 9				
Math	.81**	-.27*	.44**	.46**
Engl	-.62**	.49**	-.11	-.11
Mult R	.41**	.34**	.37**	.38**
Grade 10				
Math	1.03**	-.54**	.13	.34*
Engl	-.66**	.73**	.21	.08
Mult R	.54**	.35**	.32**	.41**
Grade 11/12				
Math	.55**	.03	.28*	.38**
Engl	-.45**	-.37**	.09	.00
Mult R	.53**	.36**	.33*	.38**

* p < .05; **p < .01

SELF DESCRIPTION QUESTIONNAIRE II

NAME_____ AGE_____ BOY_____ GIRL_____

SCHOOL_____ GRADE/YEAR_____ ENGLISH STREAM/LEVEL_____ MATHEMATICS STREAM/LEVEL_____

COUNTRY YOU WERE BORN IN_____ COUNTRY YOUR FATHER WAS BORN IN_____ COUNTRY YOUR MOTHER WAS BORN IN_____

THIS IS A CHANCE TO LOOK AT YOURSELF. IT IS NOT A TEST. THERE ARE NO RIGHT ANSWERS AND EVERYONE WILL HAVE DIFFERENT ANSWERS. BE SURE THAT YOUR ANSWERS SHOW HOW YOU FEEL ABOUT YOURSELF. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE. WE WILL KEEP YOUR ANSWERS PRIVATE AND NOT SHOW THEM TO ANYONE. THE PURPOSE OF THIS STUDY IS TO SEE HOW PEOPLE DESCRIBE THEMSELVES.

WHEN YOU ARE READY TO BEGIN, PLEASE READ EACH SENTENCE AND DECIDE YOUR ANSWER. (YOU MAY READ QUIETLY TO YOURSELF IF THEY ARE READ ALOUD TO YOU.) THERE ARE SIX POSSIBLE ANSWERS FOR EACH QUESTION -- "TRUE", "FALSE", AND FOUR ANSWERS IN BETWEEN. THERE ARE SIX BOXES NEXT TO EACH SENTENCE, ONE FOR EACH OF THE ANSWERS. THE ANSWERS ARE WRITTEN AT THE TOP OF THE BOXES. CHOOSE YOUR ANSWER TO A SENTENCE AND PUT A TICK (✓) IN THE BOX UNDER THE ANSWER YUU CHOOSE. DO NOT SAY YOUR ANSWER ALOUD OR TALK ABOUT IT WITH ANYONE ELSE.

BEFORE YOU START THERE ARE THREE EXAMPLES BELOW. I HAVE ALREADY ANSWERED TWO OF THE THREE SENTENCES TO SHOW YOU HOW TO DO IT. IN THE THIRD ONE YOU MUST CHOOSE YOUR OWN ANSWER AND PUT IN YOUR OWN TICK (✓).

	FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE
1. I LIKE TO READ COMIC BOOKS						✓

(I PUT A TICK IN THE BOX UNDER THE ANSWER "TRUE". THIS MEANS THAT I REALLY LIKE TO READ COMIC BOOKS. IF I DID NOT LIKE TO READ COMIC BOOKS VERY MUCH, I WOULD HAVE ANSWERED "FALSE" OR "MOSTLY FALSE".)

2. IN GENERAL, I AM NEAT & TIDY.			✓			

(I ANSWERED "MORE FALSE THAN TRUE" BECAUSE I AM DEFINITELY NOT VERY NEAT, BUT I AM NOT REALLY MESSY EITHER.)

3. I LIKE TO WATCH T.V.						

(FOR THIS SENTENCE YOU HAVE TO CHOOSE THE ANSWER THAT IS BEST FOR YOU. FIRST YOU MUST DECIDE IF THE SENTENCE IS "TRUE" OR "FALSE" FOR YOU, OR SOMEWHERE IN BETWEEN. IF YOU REALLY LIKE TO WATCH T.V. A LOT YOU WOULD ANSWER "TRUE" BY PUTTING A TICK IN THE LAST BOX. IF YOU HATE WATCHING T.V. YOU WOULD ANSWER "FALSE" BY PUTTING A TICK IN THE FIRST BOX. IF YOU DO NOT LIKE T.V. VERY MUCH, BUT YOU WATCH IT SOMETIMES YOU MIGHT DECIDE TO PUT A TICK IN THE BOX THAT SAYS "MOSTLY FALSE" OR THE BOX FOR "MORE FALSE THAN TRUE".

IF YOU WANT TO CHANGE AN ANSWER YOU HAVE MARKED YOU SHOULD CROSS OUT THE TICK AND PUT A NEW TICK IN ANOTHER BOX ON THE SAME LINE. FOR ALL THE SENTENCES BE SURE THAT YOUR TICK IS ON THE SAME LINE AS THE SENTENCE YOU ARE ANSWERING. YOU SHOULD HAVE ONE ANSWER AND ONLY ONE ANSWER FOR EACH SENTENCE. DO NOT LEAVE OUT ANY SENTENCES, EVEN IF YOU ARE NOT SURE WHICH BOX TO TICK.

IF YOU HAVE ANY QUESTIONS HOLD UP YOUR HAND. OTHERWISE TURN OVER THE PAGE AND BEGIN.

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	FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE
1. ENGLISH IS ONE OF MY BEST SUBJECTS.						
2. I HATE THINGS LIKE SPORT, GYM, AND DANCE.						
3. BOYS FIND ME BORING.						
4. PEOPLE CAN REALLY COUNT ON ME TO DO WHAT IS RIGHT.						
5. MY PARENTS UNDERSTAND ME.						
6. WHEN I DO A JOB I DO IT WELL.						
7. I LOOK FORWARD TO MATHEMATICS CLASSES.						
8. I FIND IT DIFFICULT TO MEET GIRLS I LIKE.						
9. I AM HAPPY MOST OF THE TIME.						
10. IF I WORK REALLY HARD I COULD BE ONE OF THE BEST STUDENTS IN MY SCHOOL YEAR.						
11. OTHER PEOPLE THINK I AM GOOD LOOKING.						
12. I HAVE A POOR VOCABULARY.						
13. I ENJOY THINGS LIKE SPORTS, GYM & DANCE						
14. I'M UNCOMFORTABLE BEING AFFECTIONATE WITH MEMBERS OF THE OPPOSITE SEX.						
15. I ALWAYS TELL THE TRUTH.						
16. MY PARENTS TREAT ME FAIRLY.						
17. SOMETIMES I THINK THAT I AM NO GOOD AT ALL.						
18. I HATE MATHEMATICS.						
19. GIRLS OFTEN MAKE FUN OF ME.						
20. I USUALLY LOOK ON THE GOOD SIDE OF THINGS.						
21. I AM STUPID IN MOST SCHOOL SUBJECTS.						
22. I HAVE A NICE LOOKING FACE.						
23. WORK IN ENGLISH CLASSES IS EASY FOR ME.						
24. I'M TERRIBLE AT EVERY SPORT I HAVE EVER TRIED.						
25. I AM POPULAR WITH BOYS.						
26. I SOMETIMES TAKE THINGS THAT BELONG TO OTHER PEOPLE.						
27. MY PARENTS REALLY LOVE ME A LOT.						
28. I CAN'T DO ANYTHING RIGHT.						
29. I DO BADLY IN TESTS OF MATHEMATICS.						
30. I AM POPULAR WITH GIRLS.						
31. I AM OFTEN DEPRESSED AND DOWN IN THE DUMPS.						
32. MOST SCHOOL SUBJECTS ARE JUST TOO HARD FOR ME.						
33. I AM GOOD LOOKING.						
34. I LOOK FORWARD TO ENGLISH CLASSES.						
35. I TRY TO GET OUT OF SPORTS & PHYSICAL EDUCATION CLASSES WHENEVER I CAN.						
36. MOST BOYS WANT ME TO BE THEIR FRIEND.						
37. I OFTEN TELL LIES.						
38. MY PARENTS PUNISH ME MORE SEVERELY THAN I DESERVE.						
39. I HATE MYSELF.						
40. I OFTEN NEED HELP IN MATHEMATICS.						
41. MOST GIRLS TRY TO AVOID ME.						
42. I AM A CALM PERSON.						
43. I LEARN THINGS QUICKLY IN MOST SCHOOL SUBJECTS.						
44. THERE ARE A LOT OF THINGS ABOUT THE WAY I LOOK THAT I WOULD LIKE TO CHANGE.						
45. I GET GOOD MARKS IN ENGLISH.						
46. I AM A SLOW RUNNER.						
47. I FIND IT DIFFICULT TO MEET BOYS I LIKE.						
48. HONESTY IS VERY IMPORTANT TO ME.						
49. IF I HAVE CHILDREN OF MY OWN, I WANT TO BRING THEM UP LIKE MY PARENTS RAISED ME.						
50. OVERALL, I AM NO GOOD.						
51. MATHEMATICS IS ONE OF MY BEST SUBJECTS.						
52. PEOPLE OF THE OPPOSITE SEX THAT I LIKE DON'T LIKE ME.						
53. I OFTEN FEEL CONFUSED AND MIXED UP.						
54. I ENJOY DOING WORK IN MOST SCHOOL SUBJECTS.						
55. I AM UGLY.						
56. I LEARNED TO READ EARLIER THAN MOST OTHERS.						
57. I'M GOOD AT THINGS LIKE SPORT, GYM & DANCE.						
58. I HAVE LOTS OF FRIENDS OF THE OPPOSITE SEX.						

	FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE
59. I SOMETIMES TELL LIES TO STAY OUT OF TROUBLE.						
60. I GET ALONG WELL WITH MY PARENTS.						
61. OVERALL, I'M A FAILURE.						
62. I NEVER WANT TO TAKE ANOTHER MATHEMATICS COURSE.						
63. I DO NOT GET ALONG VERY WELL WITH GIRLS.						
64. I WORRY ABOUT A LOT OF THINGS.						
65. I DO WELL IN TESTS IN MOST SCHOOL SUBJECTS.						
66. I HATE THE WAY I LOOK.						
67. I HATE READING.						
68. I AM AWKWARD AT THINGS LIKE SPORT, GYM, & DANCE.						
69. I GET A LOT OF ATTENTION FROM MEMBERS OF THE OPPOSITE SEX.						
70. CHEATING ON A TEST IS OK IF I DO NOT GET CAUGHT.						
71. I DO NOT LIKE MY PARENTS VERY MUCH.						
72. I AM A USEFUL PERSON TO HAVE AROUND.						
73. I GET GOOD MARKS IN MATHEMATICS.						
74. I MAKE FRIENDS EASILY WITH GIRLS.						
75. I AM A NERVOUS PERSON.						
76. I'M GOOD AT MOST SCHOOL SUBJECTS.						
77. MOST OF MY FRIENDS ARE BETTER LOOKING THAN I AM.						
78. I'M HOPELESS IN ENGLISH CLASSES.						
79. I'M BETTER THAN MOST OF MY FRIENDS AT THINGS LIKE SPORTS, GYM & DANCE.						
80. I'M NOT VERY POPULAR WITH MEMBERS OF THE OPPOSITE SEX.						
81. WHEN I MAKE A PROMISE I KEEP IT.						
82. I HAVE A LOT OF ARGUMENTS WITH MY PARENTS.						
83. I DON'T HAVE MUCH TO BE PROUD OF.						
84. I HAVE ALWAYS DONE WELL IN MATHEMATICS.						
85. I HAVE A LOT IN COMMON WITH THE GIRLS I KNOW.						
86. I OFTEN FEEL GUILTY.						
87. I'M NOT VERY INTERESTED IN ANY SCHOOL SUBJECTS.						
88. I'M BETTER LOOKING THAN MOST OF MY FRIENDS.						
89. I OFTEN HAVE TO READ THINGS SEVERAL TIMES BEFORE I REALLY UNDERSTAND THEM.						
90. I CAN RUN A LONG WAY WITHOUT STOPPING.						
91. MOST BOYS TRY TO AVOID ME.						
92. I SOMETIMES CHEAT.						
93. MY PARENTS ARE USUALLY UNHAPPY OR DISAPPOINTED WITH WHAT I DO.						
94. IN GENERAL I LIKE BEING THE WAY I AM.						
95. I HAVE TROUBLE UNDERSTANDING ANYTHING WITH MATHEMATICS IN IT.						
96. I HAVE FEWER FRIENDS OF THE SAME SEX THAN MOST PEOPLE.						
97. I AM USUALLY RELAXED.						
98. PEOPLE COME TO ME FOR HELP IN MOST SCHOOL SUBJECTS.						
99. NOBODY THINKS THAT I'M GOOD LOOKING.						
100. I LEARN THINGS QUICKLY IN ENGLISH CLASSES.						
101. I AM LAZY WHEN IT COMES TO SPORTS & HARD PHYSICAL EXERCISE.						
102. I HAVE A LOT IN COMMON WITH THE BOYS I KNOW.						
103. I AM HONEST.						
104. IT IS DIFFICULT FOR ME TO TALK TO MY PARENTS.						
105. I CAN DO THINGS AS WELL AS MOST OTHER PEOPLE.						
106. I ENJOY STUDYING FOR MATHEMATICS.						
107. GIRLS FIND ME BORING.						
108. I GET UPSET EASILY.						
109. I'M TOO STUPID AT SCHOOL TO GET INTO A UNIVERSITY.						
110. I HAVE A GOOD LOOKING BODY.						
111. I HAVE TROUBLE TRYING TO EXPRESS MYSELF WHEN I TRY TO WRITE SOMETHING.						
112. I MAKE FRIENDS EASILY WITH MEMBERS OF MY OWN SEX.						
113. I DO NOT GET ALONG VERY WELL WITH BOYS.						
114. IF I REALLY TRY I CAN DO ALMOST ANYTHING I WANT TO DO.						
115. I AM NOT VERY GOOD AT READING.						

	FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE
116. OVERALL, I HAVE A LOT TO BE PROUD OF.						
117. I AM CHEERFUL AND ON TOP OF THINGS MOST OF THE TIME.						
118. I ENJOY SPENDING TIME WITH MY FRIENDS OF THE SAME SEX.						
119. I FEEL THAT MY LIFE IS NOT VERY USEFUL.						
120. I HAVE TROUBLE WITH MOST SCHOOL SUBJECTS.						
121. I HAVE FEW FRIENDS OF OF THE SAME SEX AS MYSELF.						
122. I DO BADLY ON TESTS THAT NEED A LOT OF READING ABILITY.						
123. I AM A HAPPY PERSON.						
124. BOYS LIKE ME.						
125. MOST THINGS I DO I DO WELL.						
126. I HAVE GOOD FRIENDS WHO ARE MEMBERS OF MY OWN SEX.						
127. OVERALL, MOST THINGS I DO TURN OUT WELL.						
128. NOT MANY PEOPLE OF MY OWN SEX LIKE ME.						
129. MOST GIRLS WANT ME TO BE THEIR FRIEND.						
130. I DON'T GET UPSET VERY EASILY.						
131. NOTHING I DO EVER SEEMS TO WORK OUT RIGHT.						
132. BOYS OFTEN MAKE FUN OF ME.						
133. I GET BAD MARKS IN MOST SCHOOL SUBJECTS.						

	FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE
134. I SPEND A LOT OF TIME WITH MEMBERS OF MY OWN SEX.						
135. I WORRY MORE THAN I NEED TO.						
136. I MAKE FRIENDS EASILY WITH BOYS.						
137. I AM GOOD AT EXPRESSING MYSELF.						
138. OTHER PEOPLE GET MORE UPSET ABOUT THINGS THAN I DO.						
139. MOST GIRLS LIKE ME.						
140. IT IS DIFFICULT TO MAKE FRIENDS WITH MEMBERS OF MY OWN SEX.						
141. I INTEND TO COMPLETE YEAR 12.						
142. IT'S IMPORTANT TO ME TO BE GOOD AT THINGS LIKE SPORTS, PHYS. ED., GYM, ETC.						
143. IT'S IMPORTANT TO ME TO BE GOOD LOOKING.						
144. IT'S IMPORTANT TO ME TO HAVE A LOT OF FRIENDS OF MY OWN SEX.						
145. IT'S IMPORTANT TO ME TO BE POPULAR WITH MEMBERS OF THE OPPOSITE SEX.						
146. IT'S IMPORTANT TO ME TO DO WELL IN MOST SCHOOL SUBJECTS.						
147. IT'S IMPORTANT TO ME TO DO WELL IN MATHEMATICS CLASSES.						
148. IT'S IMPORTANT TO ME TO DO WELL IN ENGLISH CLASSES.						
149. I INTEND TO GO TO UNIVERSITY AFTER I LEAVE SCHOOL.						
150. IT'S MORE IMPORTANT TO ME TO BE POPULAR WITH SAME-SEX FRIENDS THAN OPPOSITE-SEX FRIENDS.						

NOW WE WANT YOU TO DO A DIFFERENT TASK. Below is a list of personality characteristics. Please use these characteristics to describe yourself. Indicate on a scale from 1 to 7 how true of you these various characteristics are. Please do not leave any blanks. As an example consider the characteristic HAPPY. Your answer would be:

1 if it is NEVER OR ALMOST NEVER TRUE that you are happy.
2 if it is USUALLY NOT TRUE that you are happy.
3 if it is SOMETIMES BUT INFREQUENTLY TRUE that you are happy.
4 if it is OCASSIONALLY TRUE that you are happy
5 if it is OFTEN TRUE that you are happy.
6 if it is USUALLY TRUE that you are happy.
7 if it is ALWAYS OR ALMOST ALWAYS TRUE that you are happy.

Thus, if you feel it is SOMETIMES BUT INFREQUENTLY TRUE that you are happy, you should write a "3" next to it: 3 HAPPY

1 NEVER OR ALMOST NEVER TRUE	2 USUALLY NOT TRUE	3 SOMETIMES BUT INFREQUENTLY TRUE	4 OCCASIONALLY TRUE	5 OFTEN	6 USUALLY TRUE	7 ALWAYS OR ALMOST ALWAYS TRUE
___FIRM	___NERVOUS	___WEAK	___LOYAL	___PLEASURE-SEEKING	___DETERMINED	
___DEPENDENT	___AGGRESSIVE	___BASHFUL	___STRONG	___LOVES CHILDREN	___HASTY	
___PATIENT	___CONFIDENT	___MISCHIEVOUS	___CAREFREE	___NEEDS APPROVAL	___BRAVE	
___TENSE	___COMPETITIVE	___RESPONSIBLE	___ABSENT-MINDED	___SENSITIVE TO THE NEEDS OF OTHERS	___LOUD	
___BOSSY	___CASUAL	___EMOTIONAL	___RUDE	___SELF-SUFFICIENT	___LIVELY	
___NOISY	___TIMID	___RESOURCEFUL	___SEES SELF RUNNING SHOW	___SELF-CRITICAL	___CRIES EASILY	
___RASH	___LOGICAL	___SHY	___OUTSPOKEN	___CLEAR-THINKING	___INEFFICIENT	
___SHOW-OFF	___GRATEFUL	___CHILDLIKE	___WORRYING	___SKILLED IN BUSINESS	___HELPFUL	
___INTERESTING	___SARCASTIC	___ANXIOUS	___GENTLE	___FEELS SUPERIOR	___FLASHY	
___APPRECIATIVE	___FORCEFUL	___BOASTFUL	___SILLY	___DEVOTES SELF TO OTHERS	___WIDE INTERESTS	